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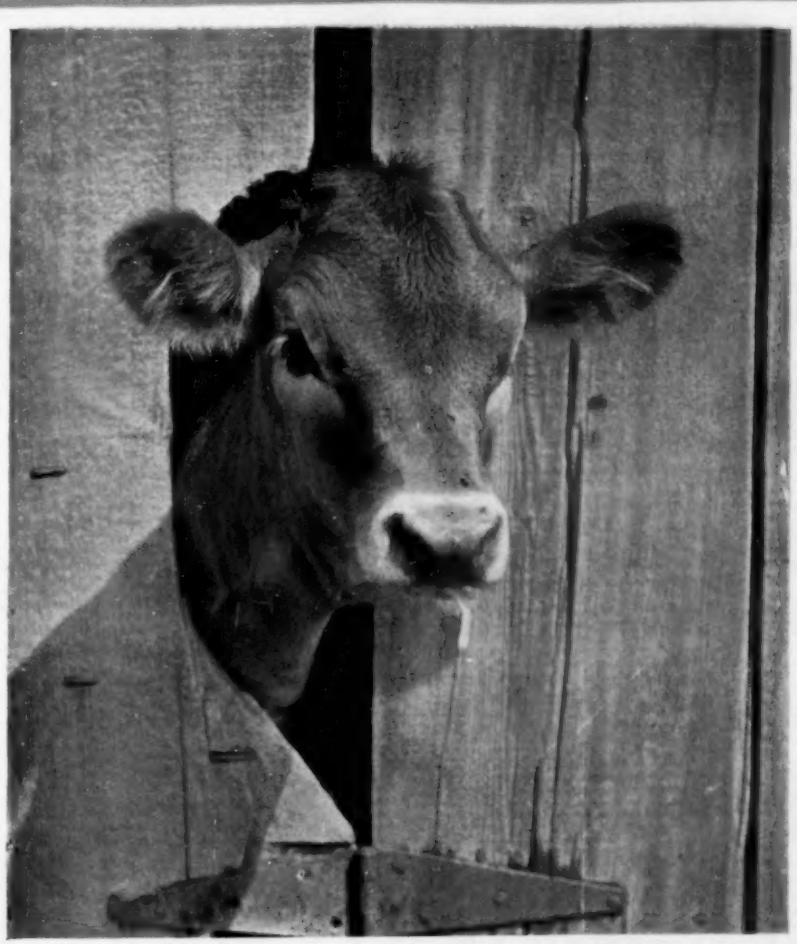
SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



DECEMBER 10, 1932

A Farmyard Fawn

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A SCIENCE SERVICE PUBLICATION

SCIENCE NEWS LETTER

VOL. XXII *No. 609*

The Weekly Summary of Current Science

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Edited by WATSON DAVIS

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? DO YOU KNOW THAT ?

Penguins have never spread north of the Equator.

Italy has officially labeled the River Fiumicino as the famous Rubicon which Caesar crossed.

Exclusive right to excavate remains of old synagogues in Palestine has been granted to the Hebrew University.

Three new strawberries and a new blackberry are among the fruits introduced last year by the U. S. Bureau of Plant Industry.

A bear which recently broke into supplies in Glacier National Park ripped open all the canned food and ate everything but the spinach.

The Eskimo curlew, once among America's finest game-birds of the shore, now is probably extinct, the last specimen known to have been taken in Argentina in 1925.

As a result of conferences on simplified practice, folding boxes used by department and specialty stores for certain lines of merchandise will be reduced from 262 varieties to 59.

The skin of the chimpanzee is much lighter in color than that of the gorilla.

The largest telescopes of today bring 300 trillion stars before modern astronomers.

A study of deafness in England and Wales shows that one person in three suffers from some degree of deafness.

Shanghai, China, has laid systematic plans for re-building Chapei, where fighting caused heavy damage about a year ago.

Traffic was heavy in ancient Rome, so that Julius Caesar made certain streets near the Circus Maximus into one-way thoroughfares.

Air transport records for this country show that there is but one fatal accident in the course of travel equal to 181 trips around the world at the equator.

The Director of the National Park Service declares that if the desert vegetation peculiar to the New World is not to be entirely wiped out, a desert national park or national monument should be established without delay.

WITH THE SCIENCES THIS WEEK

Curiosity arousing questions for the teacher and general reader. Book references in italic type are not sources of information of the article, but are references for further reading. Books cited can be supplied by Librarian, Science Service, at publisher's price, prepaid in U. S.

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ZOOLOGY
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Why is the Government giving away bison? p. 367. *Conservation in the Department of the Interior—R. L. Wilbur and W. A. DuPuy—Govt. Print. Off.,* 1931, $1.

ZOOLOGY

Surplus Bison, Elk and Deer Distributed by Government

Forest Service and National Parks Have More Animals Than they Can Keep, Thanks to Conservation Program

SO EFFECTIVE has been the conservation of game animals by agencies of the U. S. Government that it is now possible to distribute a surplus quantity of bison, elk, and mule deer for exhibition and breeding purposes, and some bison and elk are even available to be used as meat.

The two agencies of the Federal Government engaged in this distribution are the National Park Service of the Department of the Interior and the Bureau of Biological Survey of the Department of Agriculture. Different methods of distribution are pursued by these two bureaus.

The National Park Service, which disposes only of surplus buffalo and elk, from Yellowstone National Park, has authority to give a limited number of these animals to municipal zoos and other public institutions and to individuals who can give assurance that they have facilities available for properly caring for the animals. No charge is made for them, but in each case the recipient is required to pay all expenses incident to their capture, crating, and delivery. In addition to furnishing animals for exhibition purposes, after this demand is met, under special congressional legislation, the killing of any remaining surplus buffalo from the Yellowstone herd for use as meat is permitted, in order that the herd may be kept down to a total of 1,000 head, the maximum number which the range will support.

The Bureau of Biological Survey, on the other hand, has a problem of disposing of surplus buffalo, elk, and mule deer, in order to prevent over-grazing on its big-game preserves. This year the bureau has called for bids on 141 buffalo, 162 elk, and 45 mule deer. Some sales already have been made and it is believed that most of the animals will be sold, but by making special arrangements, a State or municipal park or zoo may obtain a few animals at cost of handling and transportation. Surplus buffalo and elk that cannot be disposed of in this way will be sold for meat, although animals less than two years of age will be sold only for breeding and exhibition.

The mule deer, which scientists of the Biological Survey state are suitable only for regions west of the Mississippi River, will be disposed of only for exhibition and breeding.

The National Park Service states that the shipping weight of buffalo, crated, varies from 850 pounds for yearlings to 2,000 pounds for four-year-olds and over. The shipping weight for adult elk, crated, varies from 600 to 800 pounds.

In previous years the surplus Yellowstone buffalo to be used for meat were sold to the highest bidder, but recently the demand for this meat has decreased and it was therefore suggested that the best use that could be made of the meat was to offer it to the Indian tribes in the vicinity and to the relief organizations of adjoining states.

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ASTRONOMY

Harvard Astronomers Get Photo of Meteor Spectrum

PHOTOGRAPHIC records of the spectrum of a meteor, believed to be the first ever purposely obtained, were made during the recent Leonid shower by Dr. P. H. Millman of the Harvard College Observatory. Dr. Millman carried on his observations at the Oak Ridge station of the Harvard Observatory, and on the morning of Nov. 16 succeeded in photographing the spectra of persistent trains of two unusually bright meteors. Examination of the bright bands in these "rainbow photographs" will tell scientists what elements were burned during their swift and brilliant flight of annihilation through the earth's upper atmosphere.

In spite of the disappointingly low number of meteors, Dr. Millman and his cooperators succeeded also in obtaining direct photographs of the brighter of the two meteors, as well as simultaneous observations of both from two or more well separated stations. These will enable the astronomers to make good determinations of their heights.

On the opposite side of the country, Dr. Walter T. Whitney, director of the Frank P. Brackett Observatory of Pomona College, in California, obtained an excellent direct photograph of a brilliant Leonid, and he and his associates saw as many as 70 per hour on the morning of Nov. 16. On the basis of his observations, Dr. Whitney suggests that the density of the Leonids may be greatest on the inner side of their stream, but he withholds definite conclusion pending comparison with reports of other observers.

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SEISMOLOGY

Earthquake Reported Near Chilean Coast

AN EARTHQUAKE of moderate severity occurred near the coast of Chile north of Santiago, on Tuesday morning, Nov. 29, at 6:11.1 o'clock, eastern standard time. The epicenter, as determined by scientists of the U. S. Coast and Geodetic Survey on the basis of data gathered telegraphically by Science Service, was located approximately in 32 degrees south latitude, 72 degrees west longitude.

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ONLY A STREAK OF LIGHT

With a few bright lines on either side; yet this is a high prize of astronomical effort, for it is the spectrum of a meteor, caught during the recent Leonid shower by Dr. P. M. Millman of Harvard College Observatory.

BIOGRAPHY

Eminent French Scientist Present at Own Centenary

Dr. Gueniot's Father, in 1832, Worried About State Of World and Prophesied Short Life for His Son

CELEBRATING the centenary of an eminent scientist is not unusual. The French Academy of Medicine, however, has just had the unique opportunity of celebrating the centenary of one of its living members, Dr. Alexandre Guéniot, eminent obstetrician, surgeon and author, and former president of the Academy.

Dr. Guéniot was an erect, alert figure, smiling attentively at the kindly speeches which one distinguished orator after another delivered. They all read their carefully prepared addresses. But when it came turn for Dr. Guéniot to reply, he jumped up lightly from his chair, and delivered the opening sentences of his speech without any reference to his manuscript. Afterwards he sat down and read a short paper, the whimsical wit of which made this assembly of the most eminent savants of France rock with laughter.

In the course of a presentation of a medal of the town of Paris by the Chairman of the Municipal Council, it was pointed out that a facsimile had been presented to a really old man of 117 years at the inauguration of the statue of Louis XIV in the Place des Victoires. In allusions to the centenarian's comparative youthfulness, he was reminded that Hippocrates had reached the age of 109, and that in 1809 Napoleon had received in audience a doctor born in 1690.

The day after Alexandre Guéniot was born, his father wrote to an intimate friend:

"I do not know whether to be happy or sorry over the birth of a son to which I have contributed only a modest share. The poor infant enters the world in very troubled times. Hardly 17 years have passed since peace was restored to Europe, and we still suffer cruelly from the effects of the war. Who knows if my son will not one day be forced to become the citizen of a republic? It makes one shudder. The conditions of life are daily becoming more difficult. Nanette, our servant, has paid 23 sous for half a kilo of butter, and 2 sous for each fresh egg! It is absurd and exorbitant!

"I would like to see my son embracing the noble career of medicine, but I see quite well that he cannot; one of the Heads of the Faculty has confided to me that this profession is literally invaded. And then, this madness of speed is wearing out men. Only yesterday I saw a post chaise tearing along. It makes one giddy! The horses were galloping at more than 5 leagues an hour. And everyone wants his carriage! The streets of Paris are so congested that you must wait a long time if you wish to cross them. Madness of the century, my dear friend, for which men will pay in the brevity of their days.

"My son, like his contemporaries, will not live to be old. We know not what the future has in store for him, but we can bet with certainty on his not becoming a centenarian."

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PRESENT AT OWN CENTENARY

The unique celebration of the centenary of a living scientist, Dr. Alexandre Guéniot, has just been held at the French Academy of Medicine.

PSYCHOLOGY

More Drivers Obey Laws At Light-Controlled Corners

AT LIGHT-CONTROLLED corners 85 per cent. of drivers obey the laws, but at corners where arterial stop signs are placed practically half the drivers violate traffic rules. These facts were among those reported by William A. Van Duzer, director of vehicles and traffic in the District of Columbia.

Mr. Van Duzer had stationed observers to watch the behavior of motorists at many typical intersections in the city of Washington, D. C., with a view to finding out which traffic laws and regulations were commonly disregarded and which were perhaps unreasonable. The speed of motorists was measured with the aid of an ingenious L-shaped box containing a mirror. When a motorist passes the box, a flicker in the mirror is seen by the observer stationed at a definite distance away. The observer can then time with a stop watch the car's progress from the box to the observer.

On arterial streets where the speed limit is 22 miles per hour, from 70 to 94 per cent. of the drivers were driving above the limit. On one of these streets, 94 per cent. drove above the limit, more than half between 20 and 30 miles per hour, but only 15 per cent. above 35 miles per hour.

Mr. Van Duzer pointed out that a reasonable rate which most drivers would be willing to observe on this street is near the 30-mile limit. Traffic officers cannot enforce a speed regulation disregarded by 94 per cent. of the drivers, he said.

The observation of stop signs was also recorded. Less than half those passing stop signs actually made a complete stop. A partial stop under control was made by 32 per cent., and 24 per cent. entered without stopping.

"Isn't it possible that STOP signs on arterial highways and streets should be replaced with signs such as CAUTION—THROUGH TRAFFIC?" suggested Mr. Van Duzer. "When 56 per cent. of the drivers disobey a STOP sign, is such a sign desirable? The 44 per cent. of the drivers who made a complete stop would obey a CAUTION sign. The 32 per cent. who made a partial stop would continue so with a CAUTION sign and would not be breaking the law as they now are."

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ENGINEERING

Jolts on the Highway Measured by "Roughometer"

THE JOLTS you receive as you drive over rough pavement can now be recorded automatically by a new type of "roughometer" devised by Homer J. Dana, assistant director of the Engineering Experiment Station of the State College of Washington. The riding qualities of various types of surfaces have been compared in preliminary tests conducted by Mr. Dana to test this automatic device developed at the State College of Washington. Very little difference was found between cement and oil surfaces, but a great deal of difference between new and old pavements. The smoothest road included in the test was a stretch of new concrete; the roughest was old concrete. A brick road was a close second for roughness.

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ZOOLOGY

Calves Retain Part Of Wild Things' Charm

See Front Cover

COWS are prosaic. Like all the rest of us that have grown into maturity and (alas!) responsibility, they have their workaday jobs in a workaday world, seeing to it that we get butter and, eventually, beefsteaks. But calves still have something reminiscent of the long-lost wild freedom of the ancestors of even the mildest-eyed of their mothers; they are still something akin to fawns. Even the thoroughly stabled calf that Cornelia Clarke photographed for the cover of this issue of the SCIENCE NEWS LETTER still gives one the "feel" of a soft, brown head suddenly poked at you out of a thicket a thousand miles from the nearest barn.

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PHYSICS

New Machine Measures Strength of Ultraviolet

Photocells Sensitive to Different Wave-Lengths of Light Enable Physicist to Make Quantitative Analyses

A NEW machine for measuring ultraviolet light accurately has just been developed by Ernest Victoreen, working under the direction of Dr. Hugo Fricke who is head of the department of biophysics of the Biological Laboratory at Cold Spring Harbor, N. Y. The machine makes use of the principle of the photoelectric cell, Mr. Victoreen explained in describing it to his associates at the laboratory. It is expected to be useful in measuring ultraviolet light from artificial sources when used in the treatment of rickets and tuberculosis, and also for determining exactly the amount of ultraviolet light from sunlight available in various localities for treatment and for building up general bodily resistance.

"Methods of measuring ultraviolet light in general use depend on chemical or biological effects, such as the oxidation of oxalic acid, blackening of sulfides, bleaching of dyes, effect on photographic paper, reddening effect on the skin, and bacteriological effect," Mr. Victoreen pointed out.

"Most of these methods in actual use are of poor accuracy, time consuming and inconvenient. Furthermore, no consideration is given to the difference in wavelength dependence of the effect used for recording and that for biological effect.

"The photoelectric method is free from these objections. The intensity is recorded directly, and the method is simple, speedy and convenient."

The photoelectric cell which Mr. Victoreen showed consisted of a glass bulb with a metallic cathode deposited on the inside surface and in the center a metal ring acting as anode.

"A definite electric potential is induced between the two electrodes, which potential is gradually neutralized by the electron emission from the cathode due to the ultraviolet light," he explained. "The rate of neutralization is a measure of the intensity of the radiation."

The action of the photoelectric cell depends largely on the nature of the metal used as cathode and the absorption of the envelope. With different metals and different glasses of suitable thickness, Mr. Victoreen stated that a cell could be produced having its maximum sensitivity at any desired wavelength.

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ANTHROPOLOGY

Science Seeks to Interpret Irish Nation

A FIVE-YEAR study of Irish civilization is being made by anthropologists of Harvard University, with the aim of producing a scientific interpretation of the Irish nation.

The social life of an Irish county, County Clare, is now being studied, and two years will be required to complete this part of the five-year program, says a progress report of the project, sent to *Science*. County Clare was chosen as the place to study the Irish marketing system, political institutions, land tenure, the family, and other sociological matters, because this county blends typically the old and new strata of Irish Gaelic culture.

Archaeological researches, to shed light on Ireland's ancient history, were also begun this year by Harvard scientists, working under the auspices of the National Museum of the Irish Free State. A lake dwelling of the tenth century A. D. has been excavated at Ballinderry, in County Westmeath. At Knockast, a huge cairn or stone grave was explored and 43 burials of the Irish Bronze Age were found.

Physical characteristics of the Irish people will be studied by Dr. E. A. Hooton, professor of anthropology at Harvard, who is in general charge of the entire Irish project.

The Harvard program has been accorded the official approval of the President of the Irish Free State, the progress report states.

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PHYSIOLOGY

Coal Dust Possible Benefit To Miners, Says Haldane

Mixed With Harmful Silica Dust, It is Coughed Up, Whereas Silica Dust Alone Remains Lodged in the Lungs

INSTEAD of being a health menace, coal dust breathed in by miners along with rock dust may be a positive benefit, Prof. J. B. S. Haldane of Cambridge University, noted biochemist and physiologist, told a University of Michigan audience in a lecture on "Bad Air."

The secret is that coal dust seems to stimulate the expectorant activities of the lungs and throat, so that this dust is eventually removed from the lungs. Rock dust has no such action and normally would remain, a health hazard in the lungs, but when coal dust is mixed with it, the rock particles adhere to the coal and are largely removed from the body when the latter is coughed up.

In the mining sections of the Rand, in South Africa, workers in the quartz seam gold mines are being given transfers of several months to the coal mines as a practical test of this finding, Prof. Haldane stated.

Of all working conditions, bad air of one sort or another is the greatest, but most insidious killer, far exceeding industrial accidents in its final totals, declared Prof. Haldane. Flyers, who at high altitudes get not impure air, but too little, should be warned that the symptoms of this condition are high spirits and optimism which may lead to continued exposure or foolhardy feats.

British statistics, kept on a national scale, indicate that workers in trades exposed to mineral and metallic dust, cutlery grinding being an especially bad example, are much more liable than the average man to tuberculosis, pneumonia and edema of the lungs. Limestone and igneous rock workers, and flour mill employees do not seem to suffer ill effects, but employees in dust-filled cotton mills and sand blasters do, Prof. Haldane stated. Silica dust is always dangerous.

Every employer of labor where dust or dangerous gases are an occupational risk, should take steps to remedy the condition. The worker who is being protected is usually the hardest factor to deal with, Prof. Haldane declared. Employes can easily be urged to protect themselves against machinery that may cause their death in an hour's time, but become careless with dust that may mean death in five years. Employers also benefit from protective measures. In England, he said, one of the reasons why the tin mines have been abandoned was the high compensation rates the operators had to pay workers injured under bad conditions.

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VETERINARY MEDICINE

Vampire Bats Transmit Panama Horse Disease

MURRINA or trypanosomiasis, fatal disease of horses in Panama and northern South America, is transmitted from infected cattle to healthy horses by the vampire bat.

This is the second known instance of a disease being carried by a mammal. Discovery of the bat's role in the spread of the disease was made at the Panama laboratories of the Gorgas Memorial Institute and is reported by the director, Dr. H. C. Clark.

The only other mammalian vector of disease so far known is the dog, which transmits rabies. Certain other animals, such as rats, play an important part in the spread of diseases, but the actual transmission of the germs is by insects.

Dr. Clark and associates had been investigating flies, fleas and many other insects in their more than 20-year search for the vector or carrier of this disease. Having ruled out insects, they sought for the only blood feeder left that commonly attacked horses, mules and cattle, the vampire bat, although it seemed like medical heresy to suspect this mammal.

Yet they have now established the fact that these animals acquire the disease by feeding on a horse, mule or laboratory animal infected with the disease and that they live about one month after acquiring it. During this time their appetite is unaffected, so that there is ample time for them to pass the disease on to uninfected animals on whom they may feed. The germ of the disease incubates for about ten days in the body of the vampire bat. It then gets into the saliva and so is readily transferred to the next animal the bat feeds on.

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CHEMISTRY-ENGINEERING

Ice-Destroying Chemicals Injurious to Concrete

TESTS conducted by the Michigan State Highway Department indicate that both sodium chloride and calcium chloride are injurious to concrete pavements because they weaken the mortar bond between the sand and rock in the concrete.

It makes little difference whether a large or a relatively small amount of chemical is used, B. C. Tiney of the Michigan Highway Department explained in a report to the Highway Research Board meeting in Washington, D. C. The injury will be just as great in either case. A few limited tests, however, indicate that oil put on the concrete before the initial set prevents the injurious effect.

The chemicals are usually applied with sand or cinders to partly melt the ice and imbed the abrasives. The tests were made on 28-day-old concrete.

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ENTOMOLOGY

American Insect Pest In Austrian Orchards

SAN JOSÉ scale, one of the worst insect pests of orchard trees in America, has been discovered in several recently-planted orchards in Austria. It was traced to a source in Hungary; the insects were on young trees from nurseries in that country. All such nursery stock is supposed to be fumigated with cyanogen gas, but apparently in some instances due care was not exercised.

All the affected trees in Austria have been destroyed, and the orchards where they grew are under strict quarantine. Hungarian authorities are taking steps to wipe out the focus of infestation in their country, and German agricultural and customs officials have redoubled their guard against the pest.

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ENGINEERING

Cotton Helping to Give Better Roads to South

A SAMPLE stretch of gravel road near Baton Rouge, La., was recently resurfaced with cotton cloth in tests which may yield a quick and economical method of modernizing America's millions of miles of dirt "farm-to-market" roads and find a new use for surplus cotton. Arnold M. Davis was the engineer in charge of construction.

South Carolina, Texas and Georgia are also experimenting with cotton-surfaced roads and Louisiana and Oklahoma plan to install additional "test mileage." It is reported that a strip of "cotton road" laid in South Carolina six years ago and exposed to usual traffic conditions has required no repair attention and is still in excellent condition. Bound down with an asphaltic substance and given a top dressing of oiled gravel to meet the grind of the wheels, the cotton fabric increases the life of a road by making it thoroughly waterproof.

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What is said to be America's first railway was the Granite Railway at Quincy, Massachusetts, built about 1826, with horse-drawn cars, to carry granite for Bunker Hill monument.

COTTON SHEETS FOR THE ROADBED

Heavy canvas fabric laid over the road before the waterproofing is applied, then covered with crushed stone or gravel, gives a superior surface, tests in the South indicate.

ARCHAEOLOGY

Old Drinking Horns Tell Secrets of Ancient Liquors

DRIED-UP heeltaps of beer and mead in two ancient drinking horns have yielded secrets of ancient German beverage, under the microscope of Prof. Johannes Grüss, of Friedrichshagen. Prof. Grüss summarizes his study in the German scientific journal *Forschungen und Fortschritte*.

The two horns were found buried eight feet deep in a peat bog in northern Germany. They have zoological as well as archaeological interest, for they were made from the horns of the once abundant but now almost extinct European bison.

Lurking in their cracks and under the scaled flakes of horn, Prof. Grüss found dried remains of the dregs of liquors quaffed in the far-gone days when German warriors drank as mightily by night as they fought by day. He scraped out the dried and hardened remains, soaked them up and patiently examined them under his microscope.

One horn had been used for beer, the other for mead, the evidence showed. The beer horn contained starch and protein cells from emmer, a species of wheat, together with yeast cells and fungus spores. The discovery of emmer fragments is of importance, for although it has long been conjectured that the ancient Germans used this grain in their beer positive proof has not hitherto been brought to light. Emmer was used with barley in making the beer-like beverages of ancient Mesopotamia and Egypt.

Mead was a fermented drink made of a honey solution. The mead horn yielded numbers of pollen grains of flower species visited by bees, together with the end of a bee's tongue. Mead was fermented mainly by a wild yeast found in flowers, and cells of this yeast were abundant in the scrapings which Prof. Grüss got out of the mead horn.

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MEDICINE

Wants Disease-Detecting Materials Standardized

A COMMITTEE of the American Public Health Association was urged to undertake the control of the sale of materials used in testing for certain diseases, such as typhoid fever, meningitis, pneumonia and others, in a paper by Dr. John F. Norton of the Detroit Health Department.

Health department and other laboratories cannot always make their own materials for these tests, which are used in diagnosing many diseases, but depend on serums and cultures manufactured by biological supply houses. Unless the materials are standardized by a central agency, those from one supply house might give a positive result in a case in which materials from another manufacturer would give a negative result.

"It is no reflection on the ethics of biological supply houses to insist that standardization of these products is desirable," Dr. Norton said. "Such an undertaking by this association would not only be of great service to the laboratories but would be a real aid to the medical profession who depend upon the laboratories for accurate results."

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MEDICINE

Typhus Strikes Third Health Service Worker

TYPHUS FEVER has stricken a third U. S. Public Health Service scientist who sought to conquer it. With Dr. R. E. Dyer not yet well enough from his attack to put in a full day at the laboratory of the National Institute of Health, his 32-year-old assistant in the typhus fever research, Dr. W. G. Workman, has now succumbed to the disease.

Dr. Workman had been carrying on the typhus fever investigations during Dr. Dyer's illness, and as soon as Dr. Dyer was well enough, Dr. Workman went daily to see his chief and to get directions from him.

Dr. Workman is a native of Ohio and received his medical degree from Ohio State University Medical School. He showed such promise during his interneship at the U. S. Marine Hospital in Baltimore that he was brought to the research staff of the National Institute of Health in Washington, D. C., immediately after finishing his interne training. This is a most unusual proceeding, but U. S. Public Health Service officials have found him fulfilling his early promise of becoming an able research worker. He has been a member of the research team headed by Dr. Dyer which found that the rat is a reservoir of American typhus fever and that the flea transmits the disease. The latest efforts of the group have been toward producing a protective vaccine. This has not yet been accomplished.

Dr. Dyer's attack of typhus came this fall, but the first victim on his staff was Dr. Elmer T. Ceder, 26-year-old assistant who was stricken in December, 1931.

Science News Letter, December 10, 1932

BACTERIOLOGY

Caviar Preserved By Ferments From Bacteria

THE ADDITION of minute quantities of certain ferments will keep caviar from decomposing in the absence of chemical antiseptics, Mme. Jermoljewa, a woman scientist at the Bach Institute for Biochemistry at Moscow, has found.

Ferments or enzymes are substances produced by animals and plants to help them break up and digest complicated organic substances. They all act as catalysts, that is a very small quantity will change or digest a very large amount of material.

Bacteria do much of their destructive work by liberating specific ferments. This fact gave Mme. Jermoljewa the clue for fighting the bacteria which are responsible for the caviar becoming deteriorated.

She claims to have obtained from dead bacteria ferments which inhibit and even dissolve some of the living germs responsible for this deterioration. A very small quantity of such ferments added to the caviar will prevent the growth of the undesirable bacteria. Caviar so treated at Baku five months ago, without the addition of any preservative or antiseptic, is still in an excellent condition.

This discovery may be of great economic value since it will greatly facilitate the export of caviar to America and other distant countries. It has also an important scientific significance because of its possible relations to the action of the bacteriophages which are known to destroy bacteria and which have usually been considered as living organisms.

Science News Letter, December 10, 1932

ORNITHOLOGY

Fish Hook Catches Jaybird in Mid Air

A BLUE-FRONTED JAY, apparently suspended in midair without support, confronted Ranger Naturalist Cope Jensen of Yosemite National Park recently as he was guiding an auto caravan. Investigations proved the bird to be caught on a fish hook at the end of a leader entangled in the branches of a tall alder.

Someone had been fishing along the banks of the Merced River and had caught a six-foot leader in the alder. The lower hook, baited with an angleworm, was dangling in the air, with the live jay firmly hooked in the mouth.

As Mr. Jensen and his party approached, the jay attempted to fly; then, finding this impossible, folded his wings at rest and swung like a pendulum.

With a long pole Mr. Jensen succeeded in loosening the leader from the tree and the bird flew downstream with the leader and hooks still attached. Hoping to free him, the party tried to catch the jay, but after a few minutes' maneuvering in a thicket he emerged, freed of the leader by his own efforts.

Science News Letter, December 10, 1932

IN SCIEN

ARCHAEOLOGY

Aida was Roly-Poly, Ethiopian Bowl Indicates

IMPRESARIOS who seek realism in grand opera may now have to choose plump divas for the role of Aida. Science has unearthed a picture of a real Ethiopian princess of long ago, and there is no doubt about it, the lady is decidedly roly-poly.

Patina and dirt of some 4,000 years removed from a bowl in the Museum of the University of Pennsylvania revealed the picture of the Ethiopian princess. The picture shows her consuming her supply of milk. The milk-drinking rite was on a large scale, judging by the procession of royal cows and the row of five bowls set before the princess.

When Verdi's opera "Aida" was first produced, some one suggested that Aida should be a plump heroine, since beauty and avoirdupois went together in ancient Ethiopia. But this idea was laughed down, despite the fact that weight is an attribute of beauty even today in Ethiopia, and the fact that Herodotus, first of the columnists, commented on the size of the royal ladies of Ethiopia when he traveled in that country. The bowl leaves little room for argument. Aida was fat.

Science News Letter, December 10, 1932

MEDICINE

Colds May Be Caught Before Sneezing Stage

WE MAY, it seems, catch cold from persons who are about to develop colds as well as from those who are already sneezing and blowing noses.

A report from the Johns Hopkins University bases a conclusion to this effect on an experience with two chimpanzees living under strictly controlled laboratory conditions. The animals developed typical common colds two days after they had been in close contact with one of the laboratory workers who herself had all the symptoms of a respiratory infection the next day and then proceeded to a severe common cold.

Science News Letter, December 10, 1932

FIELDS

PUBLIC HEALTH

Influenza Cases Doubled Health Officers Learn

THE AMOUNT of influenza in the country has almost doubled, reports received from state health officers by the U. S. Public Health Service show. A sharp outbreak on the West Coast has spread to the South.

For the country as a whole, 6,306 cases were reported for the week ending November 26, the last for which complete figures are available. For the preceding week the total was 3,086. Influenza reporting is said to be notoriously poor, and health officials estimate that the actual number of cases is probably five or six times the reported number.

The states having the largest number of cases are Alabama with 1,940, Arizona with 479, Louisiana with 600, and California with 1,721.

Science News Letter, December 10, 1932

ENTOMOLOGY

Australian Ants Show "Missing Link" Behavior

QUEEN ANTS in Australia show behavior traits in their mode of starting families that support the theory long held by naturalists, that ants are descended from wasp-like insects. Studies that revealed these traits were outlined by Prof. William Morton Wheeler, of the Bussey Institution.

Female ants in other parts of the world, Prof. Wheeler said, are divided into two classes. Those supplied with abundant food reserves in their bodies retire into little cavities which they make in the earth or rotten wood, lay their eggs and rear their first small families of worker ants. They eat nothing during this time, and nourish their young with their saliva. When the new workers are able to get about, they go forth and forage for food, and also enlarge the nest and take care of the young of the colony. The mother ant becomes simply an egg-laying mechanism.

The other type of non-Australian ant has no bodily reserves. When she flies forth to found a family, she finds the nest of another ant species, intrudes herself into it, and becomes a social parasite.

One thing both kinds of ants have in common: once the female goes under ground, she never comes out again.

The dominant ant group which Prof. Wheeler studied in Australia differs from both kinds of non-Australian ants, in that the female or queen ant does emerge from the earthen cell into which she retires to found her colony. She has no reserves of food within her body, and she does not become a parasite in another colony, so if the young are to be fed she must needs forage for them. This she does, bringing home pieces of freshly-killed insects.

Science News Letter, December 10, 1932

ZOOLOGY

Predatory Animals Held Useful to Farmers

MAN BLAMES the fox, mink, wildcat and other predatory wild life for doing far more damage to farm and game birds and animals than can fairly be charged against them, and tends to forget that these predators are an important factor in nature's scheme of checks and balances, which man himself is guilty of throwing out of order.

This new angle on the real damage done by predators is the result of a two-year study of the food habits of this group, arrived at by study of more than 3,000 specimens of digestive remains of nine animal species; for, skunk, weasel, mink, wildcat, opossum, raccoon, coyote and badger. The work was done by Dr. Ned Dearborn for the University of Michigan School of Forestry and Conservation.

The analyses made by Dr. Dearborn from many specimens indicate that such ordinary judgments usually wrong the predator. The skunk gains over 57 per cent. of his diet from insects, while birds comprise only 2.35 and eggs 0.11 per cent. A skunk may eat a pint of insects at a single meal.

The fox is not in general the popularly imagined terror of the hen roost or public enemy of the game bird. The fox diet in Michigan, according to the 1931 studies, was 91 per cent. mammals, rabbits and hares comprising 81 per cent. of this class, with mice, rats, squirrels, deer, moles and shrews in order.

Science News Letter, December 10, 1932

ARCHAEOLOGY

Town of Viking Age Unearthed in Ireland

A STRIKING picture of life in Viking times about a thousand years ago is revealed by discoveries at Ballinderry, Ireland, made by the Harvard University Expedition under Dr. O'Neil Hencken of the Peabody Museum.

For four months, the Harvard Expedition has been engaged in excavating an artificial island, or crannog, inhabited over a considerable period of time when the Norsemen invaded and settled in Ireland about 1000 A. D.

This artificial island was built up of layers of peat and brushwood held together by massive piles of timber. On the island was the wooden floor of a circular house with a circular central hearth and a wide doorway. When this circular house had fallen into decay, further layers of brushwood and peat were piled on it, and two smaller, rectangular houses were erected upon them.

The manner of life on the island is indicated by remains, animal and other which have been found. Reports received here list among the animals cows, sheep, deer, goats, pigs, and a small, agile cat. The people were hunters and herdsmen and also practised agriculture, as is shown by the coulter of a plow and the querns in which they ground their grain. They had wooden vessels, in place of pottery. Tools and weapons were of iron and ornaments chiefly of bronze.

Science News Letter, December 10, 1932

ENGINEERING

New Device Measures Car's Air Resistance

FOR PROBABLY the first time the air resistance of a car on the road under actual operating conditions has been accurately measured by Prof. W. E. Lay, of the University of Michigan.

The solution he found in a "floating envelope" or cover of pressed wood fastened to a light wood frame which was mounted on steel tubing free to move forward or backward on grooved ball-bearing rollers. As the car within this envelope moves forward, the envelope moves back due to pressure from the air, and the force of this backward drive is measured with a dynamometer.

Science News Letter, December 10, 1932

MEDICINE-PHARMACOLOGY

Isolation of Strychnine

"A Classic of Science"

The Poisonous Alkaloid Occurs in Three Related Plants And Was Discovered by a Famous Team of Pharmacologists

MEMOIRE sur un nouvel alcali végétal (la strychnine) trouvé dans la fève de Saint-Ignace, la noix vomique, etc. Par MM. Pelletier et Caventou. (On a new vegetable alkali, strychnine, found in Saint Ignatius' bean, nux vomica, etc.). Published in Journal de Pharmacie et des Sciences Accessoires, Vol. V, April, 1819. *Translated for the* SCIENCE NEWS LETTER *by Helen M. Davis. This is a literal translation of extracts from the original publications.*

LINNAEUS thought that plants of the same family, and, even more, those of the same genus, were very frequently endowed with analogous medical properties. Murray and Gmelin shared this opinion: this is also the belief held by the most celebrated botanists of our day.

If, as we cannot doubt upon such authority, the action which the plants are able to exert upon the animal economy is connected with their essential constitution, in such a way that plants of the same family usually possess the same medical properties, is it not because they contain the same *immediate substances*, and through these there acts upon the animal economy a common principle, stronger, more energetic, seeming to impress its character upon all parts of the plant which contains it? And if Gleditsch, Cullen and several others contend that it is not possible to judge the properties of plants from their exterior forms and their botanical characteristics, it is because they take in too literal a sense the expressions which their opponents use. But by stating the question thus:

Plants owe their medicinal properties to the immediate substances which constitute them; plants of the same family very frequently contain the same substances or immediate principles; the characteristic medicinal property, in every plant, is chiefly due to one of these bodies; the intensity of this property is proportional to the quantity of the principle which determines it, and if this principle happens to be wanting in one species, the medicinal property characteristic of the family is also lacking in it; perfect accord upon the subject will be found to reign among botanists. It was with the object of establishing these truths in an incontestable manner that we undertook chemical researches upon the most active plants of the materia medica.

The Genus Strychnos

Among these there was reason to select several species of the genus *strychnos,* in particular nux vomica and St. Ignatius' bean (*Strychnos nux vomica* and *Strychnos ignatia*). These two seeds have, in recent times, attracted all the attention of physiologists, and the first has given rise to dissertations of the savants read in the bosom of the Academy. The effects of the second have also been observed; but the difficulty of procuring its seeds has made these observations less numerous. Several chemical studies have also been undertaken upon nux vomica, and there are two analyses of its seeds; one published by M. Desportes, and the other, little different, by M. Braconnot. The composition of St. Ignatius' bean, on the contrary, had been entirely ignored, until the time that we, having got a certain quantity of this substance, submitted it to analysis. It was while occupied with this work that we were able to isolate the active principle of this material and of the other poisonous *Strychnos.* We have obtained it in crystalline form, perfectly white, and with all the characteristics of a pure and entirely distinct substance, endowed with the particular and characteristic properties of salt-forming bases, that is to say, with the faculty of uniting with acids, of saturating them by forming with them true neutral salts, soluble, transparent and crystallizable.

Encouraged by this success we tried again the analysis of nux vomica, and we were not long in finding in this material the alkaline principle of St. Ignatius' bean. In nux vomica, it constitutes, by its combination with an acid and its mixture with coloring matter, the yellow bitter principle described by MM. Desportes and Braconnot. It exists, also, in a wood known by the name of *bois de couleuvre* [snake wood], the naturalists place with the strychnos (*Strychnos colubrina*).

The explanation of the chemical properties of the active material of strychnos and of its action upon the animal economy is the subject of this memoir.

The presence of an active material in three species of plants of the same genus authorizes us to derive the name which it is necessary for us to give such a new substance, from the name of this genus itself: consequently we propose to call *strychnine* the substance which is the principal subject of this memoir.

We would first have named it *vauqueline,* in honor of the famous chemist who first demonstrated an *organic alkali;* but we have followed the advice of the commissioners of the Academy, who thought *that a cherished name should not be applied to a poisonous principle.* We shall not discuss all the experiments which we made upon St. Ignatius' bean and nux vomica, to separate the different immediate principles which make up these substances. But we think we should report the experiments which we conducted in the discovery of strychnine, this publication being able to offer something of interest from the point of view of the history of organic analysis.

Extraction of Strychnine

The horny texture of St. Ignatius' bean, and the quantity of fatty matter which it contains, not permitting it to be reduced to powder, we divided it by means of a grater. In this state, it was subjected to the action of sulphuric ether in a valved digester. In this way we obtained a sort of butter or oil of thick consistency, of a slightly greenish color, transparent while it is in the state of fusion. This oil, which we at first regarded as a pure substance, had the characteristic action of St. Ignatius' bean

upon the animal economy, and made the animals die in an attack of tetanus. We thought afterward that this property did not belong to the oil, but to a body which it contained, and which we had not at that time suspected.

The St. Ignatius' bean, yielding nothing further to ether, was treated with boiling alcohol. The numerous alcoholic decoctions which we were obliged to make to remove from the St. Ignatius' bean all that seemed to be soluble in that medium, were reunited after having been filtered twice; the first time, boiling, to separate them from the material of the seeds; the second time, after being completely cooled, to obtain a small quantity of waxy material which separated on cooling. They were then subjected to evaporation, and yielded a yellowish brown material, very bitter, soluble in water and in alcohol. This material was most active and violent in its action on the animal economy.

Paralleled Earlier Observations

Thus far our analysis ran parallel to the analysis of nux vomica as carried out by MM. Desportes and Braconnot. Like those chemists, we found a very active fatty substance, and a yellow-brown very bitter one, not less active than the other. Although we were unwilling to admit that two such different bodies in their chemical composition as the fatty material and the yellow bitter material might have a similar effect on the animal economy; and always regarding the fatty material as a pure and homogeneous substance; having, on the contrary, strong reasons for considering the bitter colored principle as of more or less complex composition, our attention turned to the latter, and supposing that it would retain the fatty material in combination, we varied our attempts to separate it entirely. We succeeded, it is true, by many means, in separating from it a slight amount of fatty material; but it always retained its activity. Solutions in water and alcohol, the action of ether, of salts, of metallic oxides, were tried in vain, and we always remained in the same uncertainty. Finally, we perceived that the fatty material was susceptible of being saponified, we tried an attack upon the colored, bitter principle by employing alkalies, hoping to find greater facility in effecting the separation of the fatty material when it should be in the state of saponification. Having then mixed a solution of caustic potash with a fairly concentrated solution of the bitter yellow material obtained from St. Ignatius' bean, there immediately formed an abundant precipitate. This precipitate, washed by cold water, in which it was insoluble, showed a white, crystalline material, of excessive bitterness; the alkaline liquor retained all the coloring matter, and an acid, to which we will return later.

After having thus obtained the white material, we hastened to examine its properties. We soon perceived that it possessed that of restoring to blue vegetable colors reddened by acids, although it was impossible to recognize the least traces of potassium in the last washings of the white material. Nevertheless, to remove the least doubt, we prepared new quantities of crystalline material, by treating several grams of the bitter yellow material with very pure magnesia, with the aid of prolonged boiling for several minutes. The whole was cooled and thrown upon a filter which retained the magnesia and the crystalline material as a mixture, the coloring matter was entirely washed away by washing with cold water, which has but slight effect upon the bitter crystalline principle; the latter being, on the contrary, very soluble in alcohol, it was separated, by this means, from the magnesia, and obtained in a great state of purity. In this state, it displayed its alkaline properties in a very marked manner.

Frightfully Energetic Action

The frightfully energetic action which this material exercised upon the animal economy, action confirmed by a great number of experiments reported at the end of this memoir, allowed us to hesitate no longer in considering this substance as the active principle of St. Ignatius' bean; but then it ought to be found again in the fatty material, and that material, upon being deprived of it, ought to lose its poisonous properties. Experiment confirmed our idea. By dissolving the fatty material in ether in the cold, we obtained a certain quantity of crystalline material, and we were soon able to deprive the fatty material of all action on the animal economy, by boiling it for a long time in water acidulated with hydrochloric acid, which took up the last portions of alkaline matter.

The bitter, alkaline, crystalline material from St. Ignatius' bean, or, no longer to make a periphrasis do, strychnine, should be found in nux vomica: experiment soon confirmed our suspicions; but obtained by the same process, it was neither white nor crystalline like that furnished by St. Ignatius' bean, and it was rather difficult to recognize. If we had not been prejudiced in favor of its existence by our experiments upon St. Ignatius' bean, it would have escaped our researches as it did those of the chemists who preceded us in the analysis of nux vomica. It was colored, sticky, lumping, forming a mass. We recognized that it was contaminated with a large quantity of fatty material which it failed to get rid of. The quickest and most economical process for obtaining pure strychnine from nux vomica consists in making an alcoholic extract, which is dissolved in water; then add to the liquid a solution of lead sub-acetate, just to the end of precipitation. By the lead acetate there is precipitated at one time the acid combined with the strychnine, the fatty material, as well as the greater part of the coloring matter and the gum which make up the alcoholic extract of nux vomica.

The strychnine remains in solution, combined with the acetic acid. The liquid contains beside a part of the coloring matter not precipitated by the lead acetate, and sometimes an excess of lead acetate. The lead is removed by hydrogen sulphide; filter and boil the filtrate with magnesia which removes the acetic acid, and precipitate the strychnine; wash it with cold water, redissolve it in alcohol to separate it from the magnesia added in excess, and by evaporation of the alcohol it is obtained in a state of purity. If it is still not perfectly white, it is necessary to redissolve it in acetic acid or hydrochloric acid, and precipitate it anew with magnesia. It is by using this procedure that we have been able to obtain strychnine from *bois de couleuvre* (*Strychnos colubrina*).

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ASTRONOMY

Ammonia Gas Detected In Atmosphere of Jupiter

GASEOUS ammonia has been detected in the atmosphere of the planet Jupiter, by Dr. R. Wildt of the astronomical observatory of Göttingen University. Dr. Wildt made his discovery through a study of the infra-red spectrum of the planet's light. He has also found methane, or marsh-gas, in the atmosphere of Jupiter, Uranus, Saturn and Neptune.

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ASTRONOMY

Brightest Star Now Visible; Regulus Occulted Dec. 18

Winter Constellations Developing Fullest Splendor, With Orion and Taurus Holding Center of Stage

By JAMES STOKLEY

THE planets that have been a feature of the evening sky during the past year have now almost completely vanished, but in their place some of the most glorious of the starry groups have come.

The brightest star in the sky, Sirius, the dog-star, shines now in the southeast. Almost directly east and only slightly inferior in brightness, is Procyon. These stars mark the greater and lesser dogs, Canis Major and Canis Minor, that accompany the hunter Orion, the constellation seen directly above Sirius. The most characteristic feature of this famous group is the row of three stars that form the warrior's belt, now in a vertical position. To the south of the belt is a brilliant star, Rigel, above it is Bellatrix and to the north is Betelgeuse.

Above Orion is a bright reddish star. This is Aldebaran, and it marks Taurus, the bull, the star representing the animal's baleful eye. Old star maps with their picturesque mythological figures revealed Orion with upraised club about to strike the charging bull. The row of stars running northwards from Betelgeuse is the arm with the club, and the stars between Bellatrix and Aldebaran account for the other arm.

Another constellation with two well-known stars is just north of Orion. This is Gemini, the twins, and the stars are Castor and Pollux. As the group is seen these December evenings in the eastern sky, the two are a little to the north of the east point, one above the other. Pollux, brighter of the two, is the lower.

Above Gemini is Auriga, the charioteer, with Capella, third most brilliant of the stars now visible. Perseus is still higher, now almost at the zenith. While it does not contain any first magnitude stars, it is a conspicuous constellation, with a curved row of stars, starting towards the northwest and turning around as it approaches Capella. This is called the "segment in Perseus." This also forms the eastern side of a letter A, the top of the A being at the northwestern end of the segment. Next to Perseus to the northwest is Cassiopeia, with its well-known stars in the shape of a W.

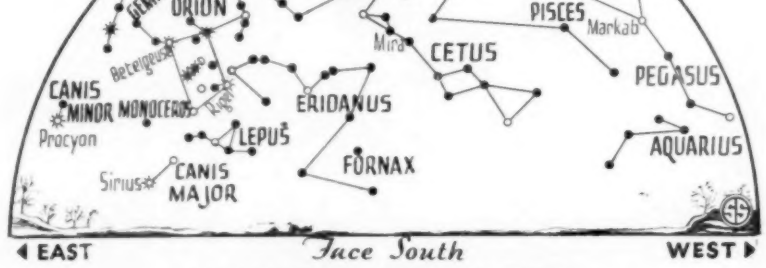
High in the west and now standing on one corner is the square of Pegasus, made of four stars of approximately equal brightness, one of which (the upper one) is in the neighboring group of Andromeda. Low in the northwest standing upright is the northern cross, with the first magnitude star Deneb at the top. The cross forms part of Cygnus, the swan, which is now getting ready to dive behind the horizon and disappear from the evening sky until next summer.

Lyra, the lyre, is nearby, still lower and farther to the north. The bright Vega remains visible, but, though it is the second brightest of the stars now seen in the evening sky, it is so low and its light is so much reduced by its passage through the atmosphere of the earth, that it is far inferior in brilliance to Capella.

In the southwest in the early part of the evening the planet Saturn can be seen near the horizon. However, it sets about three hours after the sun and is not included on the maps, which represent the sky as seen about 9:00 p. m., in the middle of the month, an hour later at the beginning or an hour earlier at the end of December.

If you stay up late enough you can see some other planets. Mars and Jupiter both rise about midnight and can be seen in the east in the early morning hours. Jupiter is the lower and brighter of the two. Mars can also be distinguished by its red light. Both are easily recognized as planets because of their steady glow, so different from the scintillations of the stars. Later in the morning, about two and a half hours before sunrise, Venus arises and shines with a brilliant light. Mercury, nearest of all the planets to the sun, comes into view on the twenty-third and then can be seen for an hour or so before sunrise. Thus, just before Christmas, the morning sky before sunrise will afford an extraordinary display of planets. Mercury, Venus, Mars and Jupiter will be visible simultaneously.

Another interesting constellation in the December evening sky, though it contains no especially bright stars, is Cetus, the whale, which can be seen in the southwest in the position indicated on the maps. The most interesting body in this group, and, indeed, one of the most interesting in the sky, is the star Mira, the first variable star ever to be discovered. This was first noticed on August 13, 1596 by David Fabricius, a European amateur astronomer. Then it disappeared from his view, but he saw it again on February 15, 1609. In 1638 a Dutch astronomer, Phocylides Holwarda, gave the true explanation of its strange disappearances and returns. He showed that it was a variable star which more or less regularly diminishes and increases in brilliance. Many variable stars have been found since then, and



THE HUNTER AND THE BULL

Magnificent in the southeast, this classic drama of the heavens again becomes prominent with the coming of winter.

one whole branch of astronomy is devoted to their study; but Mira still remains perhaps the most interesting.

While many variable stars are perfectly regular, Mira is very uncertain. On the average, it takes about 330 days for it to go through a complete cycle, but sometimes the period is reduced to as little as 300 days while at other times it is as much as 360 days. When brightest, it is sometimes of the first magnitude. In 1779 Sir William Herschel found that it was nearly as bright as Aldebaran, but at other times, even though it was at the maximum of a cycle, it was scarcely bright enough to be seen with the naked eye. Its brightness at minimum does not have quite so large a range, the variation being from eighth to tenth magnitudes.

At present a telescope is required to see Mira, so that the position indicated by it in the maps is now vacant to the unaided eye. It is increasing in brightness and will probably reach its maximum next spring, but then the sun will be close to it, and it will not be visible. In a few more years the cycle of its variation will get out of step with the year and then, perhaps it will be seen once more.

The cause of the variability of Mira is still a mystery, but apparently it is due to some sort of pulsation, or oscillation, inside the star. Dr. J. H. Joy, astronomer at the Mt. Wilson Observatory, has found by studies of its spectrum that it sometimes approaches us and sometimes recedes, which can be explained by such a pulsation; as the side towards us, from which the light comes with which we observe it, would do that very thing. His colleague, F. G. Pease, has measured its diameter with the interferometer and has found it to be about 304,000,000 miles, more than three times the distance of the sun from the earth. Its volume is about 44,000,000 times that of the sun. If it really is pulsating, its diameter probably changes about 30,000,000 miles, but the methods of measuring the diameter are not quite precise enough to detect this.

Incidentally, the study of variable stars is one branch of astronomy in which small telescopes can do valuable work, and there is a large organization of amateur astronomers devoted to their study. This is the American Association of Variable Star Observers, generally known as the AAVSO, with headquarters at the Harvard College Observatory in Cambridge, Mass.

During December the moon is at first quarter on the fourth. On the 12th it is full, on the 20th it is at last quarter, and it is new again on the 27th. Thus the first half of the month will be provided with moonlit evenings.

On the 18th an interesting phenomenon will be visible in the eastern part of the country. The moon, then in a gibbous phase, will occult, or "eclipse," the bright star Regulus, in the constellation of Leo. Regulus rises a little later in the evening than the time for which the maps are intended.

At about 9:50, eastern standard time, the star, which is one of the brightest that can ever be so occulted, passes behind the edge of the moon's disc for a few minutes. In the middle and western parts of the country, this event is already over when the moon rises.

Occultations are of scientific interest because they can be used to check the predictions of the moon's motion in the sky. The positions of the stars are accurately known, the exact moment at which a star passes behind the moon, or reappears afterwards, can be determined, and so the position of the moon at that moment can be found. Some occultations occur every night, but seldom does it happen to so bright a star as Regulus.

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BACTERIOLOGY

Hamburg Steak Has Fewer Germs When "Frosted"

HAMBURG steak that has been frosted has fewer germs than the non-frosted variety. The frosting, in this case, bears no relation to the kind Grandmother used to put on cakes, but is a process of quick freezing and subsequent storage at zero Fahrenheit.

Ten packages of frosted hamburg steak purchased from retail stores gave a count of between 700,000 and 3,200,000 germs to the gram, with an average of 2,000,000 per gram. It takes more than 450 grams to equal a pound of hamburger. Hamburg steak of highest quality purchased from high grade meat markets gave bacterial counts of from 6,000,000 to 43,000,000 bacteria per gram, it was found by Laurence P. Geer of Massachusetts Institute of Technology, and William T. Murray and Ernest Smith of Birdseye Laboratories, Gloucester, Mass.

Science News Letter, December 10, 1932

BOTANY

Arabs Use Red Squill To Kill Vermin

RED SQUILL, recommended by Occidental biologists as an efficient yet safe rat poison, is used by the Arabs of Palestine and other parts of the Near East against a considerable variety of vermin. They poison mice with it, they rub it on the walls of their houses to drive out insect pests, and they apply it to worm-infested sores on their donkeys to clear them up. These Arab uses of the plant, established by long tradition, have been listed by Dr. Ephraim Ha-Reubeni of the Hebrew University in Jerusalem.

Red squill, known also as sea onion, is related to both onions and lilies. It grows wild in the Near East, so that it is easy to obtain. In many places it is a weed, and field laborers clearing it out of cultivated areas often suffer severely from the effects of its irritating juice on their hands.

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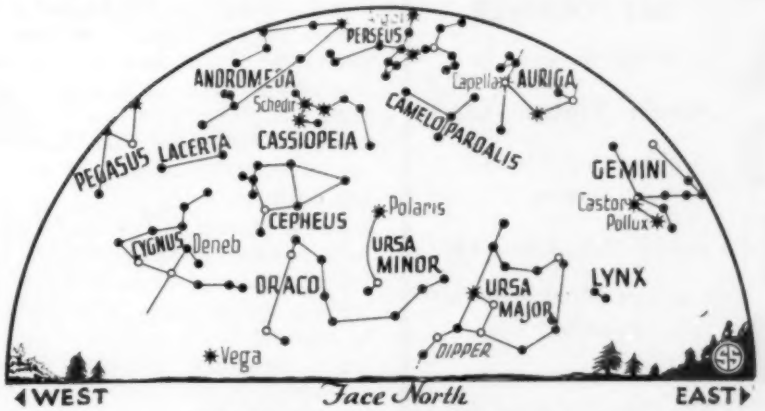


THE QUEEN AND THE BEAR

Cassiopeia, the proud queen, is throned high in the northern sky, while the Great Bear swings low near the horizon.

ANTHROPOLOGY

Ancient Human Remains Discovered in Texas

PARTS of a human skull found near Brownwood, Texas, are causing much interest among scientists. Although the find was made on Nov. 14, no report has been given until now, pending preliminary geological and anthropological examination.

The find was made while rock was being excavated for road building. The men who first found the bones thought they were imbedded in solid limestone, as they were discovered following heavy blasting of rock. Closer observation, however, shows that the skeleton, of which a considerable part was probably present, lay by burial or otherwise in a rock shelter underneath a projecting heavy rock ledge.

The parts of the skeleton recovered were the entire lower jaw, the front of the skull, including the eyebrow ridges and most of the frontal bones, nearly all of the nasal bones and a disconnected part of the occipital bone.

The first bone found, the lower jaw, was picked up by J. H. Arlidge and John O. Palmer, contracting engineers. This bone was brought to the office of Drs. Ned and John W. Snyder, in Brownwood, by State Engineer Wesley Hall. The importance of the find was recognized and search was made for other parts of the skeleton. The locality of the find, three miles west of Brownwood, was visited on Nov. 22 by Dr. E. H. Sellards and Prof. I. A. Pearce of the University of Texas.

The most striking characteristics of those parts of the skull that have been recovered are: exceptionally thick and heavy eyebrow ridges and the correspondingly small sinus cavities, and exceptionally thick and heavy frontal bone which is eleven millimeters thick. The nasal bone, although the extreme tip was lost in blasting, is exceptionally long and high. There had been possibly in life a slight injury at the left side of the nasal bone, but an X-ray made by Dr. Ned Snyder shows no resulting deformity or abnormality of consequence in the bone.

The upper ramus, or branch of the jawbone, is exceptionally wide and is at right angles to the lower ramus, which is very heavy. The chin prominence is well developed.

The jawbone indicates a man of large size, with strong muscles. There is, however, no evidence of abnormal size as compared to some large individuals of the present day.

The lower jaw was entire and the teeth are all sound and were all in place at the time of death. An X-ray of the teeth made by Dr. John Snyder shows that the teeth were in perfect condition and the bony structure of the jaw free from disease.

The locality is in the bluff of a small stream, Adams Branch, and near by is one of the "burnt mounds" common to this part of Texas, indicating an Indian camp site. Whether or not the skeleton represents the people who inhabited this site or an earlier Indian race is at present unknown.

In the absence of associated fossil animals or other evidence from the conditions of the occurrence, the age of the remains is altogether problematical. It is, however, in the opinion of the scientists a remarkable Indian skull, making it important that search be made for more complete representation of the race to which it belongs.

Science News Letter, December 10, 1932

RADIO

The Science Service radio address next week will tell what occurs

WHEN SCIENTISTS GET TOGETHER

It will be given by

Austin Hobart Clark

of the U. S. National Museum

FRIDAY, DEC. 16

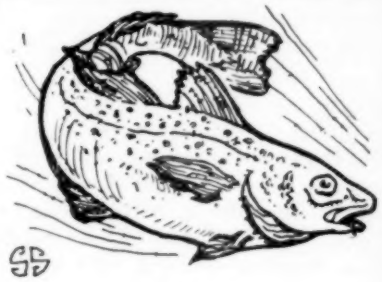
at 12:45 P. M., Eastern Standard Time

Over Stations of

The Columbia Broadcasting System

ICHTHYOLOGY

NATURE RAMBLINGS by Frank Thone



Codfish

DEEP WINTER on the Grand Banks, off Newfoundland, where the Gloucester fishing boats go. Some of the romance went out when power boats joined the fleet, that once depended altogether on canvas, but by the same token some of the danger went out, too, and some of the anxiety in the little houses left behind on shore. Even as it is, there is still danger enough to make the business of the fishermen one of the more hazardous occupations.

The big fish that these men pursue well merits its position as the "sacred fish" of the great State of Massachusetts, for the wealth of many an old Massachusetts family came out of the little boats that plied between its shores and the cold northern waters that the codfish loves. And though over-fishing has made the catch smaller and harder to get nowadays, the barrels and boxes of salt cod still pile up in thousands on the wharves.

A fine business-like fish, the cod. A big, solid fish, just a trifle portly, as a successful individual should be, but not too stout to pursue his occupations vigorously, nor to depart from the shape of a properly orthodox fish. Acquisitive, too—his detractors say voracious. Individualistic as a good New Englander should be, not to be taken in mobs in a net, but requiring special attention with a hook. Plenty of big fins for a life on the high seas. And when he departs this life, he leaves an excellent heritage of codfish balls to an appreciative world.

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The gold color of the rocks forming the Golden Gate in Yellowstone National Park is caused by the color of an encrusting lichen.

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Medicine

ALCOHOL AND MAN: THE EFFECTS OF ALCOHOL ON MAN IN HEALTH AND DISEASE—Edited by Haven Emerson and others—*Macmillan,* 451 p., $3.50. Twenty-two authors have contributed to this comprehensive account of present knowledge of a much-discussed subject. The intelligent lay reader will find that the book gives without prejudice the facts he wants to know about this controversial subject.

Science News Letter, December 10, 1932

History

THESE UNITED STATES AND HOW THEY CAME TO BE—Gertrude Hartman—*Macmillan,* 335 p., $5. A very generous number of fine illustrations, and the bold, clear type would attract almost any child to this book. The history of the United States as Miss Hartman recounts it is a spirited, human story. The book is a sequel to "The World We Live In and How it Came to Be" by the same author.

Science News Letter, December 10, 1932

Biophysics

DIE MITOGENETISHE STRAHLUNG—A. Gurwitsch—*Springer (Berlin),* 384 p., R.M.26.15. The literature on mitogenetic radiation has become voluminous, and is much scattered. It is a distinct service to biology, therefore, that this pioneer worker in the much-controverted field performs by bringing the more important results and discussions together in this summary volume.

Science News Letter, December 10, 1932

Psychology

EXPERIMENTAL PSYCHOLOGY—Hubert Gruender—*Bruce,* 445 p., $2.50. A psychology defined as the study of "our conscious life." More than the usual space is given to chapters on instinct, thought, and the will. The latter contains an argument for free will. The author is a Jesuit on the faculty of Saint Louis University.

Science News Letter, December 10, 1932

Hygiene

HEALTH, A PRACTICAL BOOK ON HYGIENE—George S. Foster and Leon G. Kranz—*Christopher,* 218 p., $3. Here is one of the old-fashioned, didactic hygiene textbooks. Much of the advice is sound, but the authors give their own opinions the force of factual presentation. For example, in discussing the undoubted benefits of walking, they state: "Closed cars may properly be termed death chambers for those who ride to and from work in them, and their constant use should be counterbalanced in some way."

Science News Letter, December 10, 1932

Biochemistry-Bibliography

BIBLIOGRAPHICAL SURVEY OF VITAMINS, 1650-1930—Ella M. Salmonsen—*Wodlinger,* 334 p., $10. This should prove a very useful and valuable book to the many students and investigators whose work has a bearing on the vitamins. The bibliography is said to be particularly complete because of the richness of the collection at the John Crerar Library, where Miss Salmonsen is medical reference librarian. A section on patents is contributed by the publisher, Mark H. Wodlinger.

Science News Letter, December 10, 1932

Geography

PICTURE MAP GEOGRAPHY OF THE WORLD—Vernon Quinn, pictures by Paul Spener Johst—*Stokes,* 216 p., 50 maps, $2.50. Taking the countries of the earth in turn, the author presents a rapid fire of facts about them, told in short, precise statements. Considering that the book is for children and deals with lands mostly strange to them, the maps might well have contained fewer pictures, portrayed more sharply. However, the idea of the book is a good one, and children will probably like geography in this form.

Science News Letter, December 10, 1932

Paleobotany

GRASSES AND OTHER PLANTS FROM THE TERTIARY ROCKS OF KANSAS AND COLORADO—Maxim K. Elias—*Univ. of Kansas,* 34 p., 3 pl. This constitutes No. 1 of a new series. Contributions to the Paleontology of Kansas, issued as a part of the University of Kansas Science Bulletin.

Science News Letter, December 10, 1932

Paleobotany

PLIOCENE DIATOMS OF WALLACE COUNTY, KANSAS—G. Dallas Hanna—*Univ. of Kansas,* 25 p., 4 pl. Of interest to systematists and paleontologists.

Science News Letter, December 10, 1932

Microscopy

THE MICROSCOPE — Simon Henry Gage—*Comstock,* 589 p., $4. A generation of scientists who have cut their eyeteeth on the covers of Gage's "The Microscope" will welcome this, the fifteenth edition, which has also been surnamed the Ultraviolet Edition. Appropriately so: a new section deals with the advances in microscopy made possible by the use of ultraviolet light. Stress is also laid on the desirability of examining fresh and living material wherever possible, rather than stained preparations.

Science News Letter, December 10, 1932

Anthropology

ANTHROPOLOGY OF ADULT MAYA INDIANS—Morris Steggarda—*Carnegie Institution of Washington,* 113 p., 11 pl., paper $1.25, cloth $1.75. Measurements on more than a thousand Mayas of Yucatan were taken for this study, and are reported here in many statistical tables with accompanying discussion. Comparisons with other Indians and with other races are given, adding to the interest and usefulness of the publication.

Science News Letter, December 10, 1932

Evolution

THE GIST OF EVOLUTION—Horatio Hackett Newman—*Macmillan,* 154 p., $1.50. Few of the spate of popular books on evolution that followed the Scopes case have ever seen the light of a new printing; most of them are already forgotten. But this brief but sufficient statement by a veteran of the Battle of Dayton, a scientist of high rank and a sane and tolerant thinker, has met a continuing demand, so that a second edition has now appeared.

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Paleontology-Evolution

THE GEOLOGICAL HISTORY AND EVOLUTION OF THE HORSE—Elmer S. Riggs—*Field Museum,* 54 p., 19 pl., 40c. A compact and very readable summary of horse history, excellently illustrated.

Science News Letter, December 10, 1932

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